



Forest Service
U.S. DEPARTMENT OF AGRICULTURE

Pacific Northwest Region, Okanogan-Wenatchee National Forest

February 2022

Mad Roaring Mills Landscape Restoration Project

Draft Environmental Assessment and Finding of No Significant Impact



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PROJECT INFORMATION

Project Name: Mad Roaring Mills Landscape Restoration Project

Project Initiation Date: 5/13/2021

Proponent Name: USDA Forest Service, Okanogan-Wenatchee National Forest

Responsible Official: Kari Grover-Wier, District Ranger

Unit: Okanogan-Wenatchee NF, Entiat RD

County: Chelan

Anticipated Implementation: June 2022

Signing Authority: District Ranger

PALS Tracking #: 59963

Project Webpage: http://data.ecosystem-management.org/nepaweb/nepa_project_exp.php?project=59963

Story Map: <https://arcg.is/0G8rGu0>

General Location: The 64,995 acre project area is located in the lower Entiat Valley, encompassing the Lower Mad, Roaring Creek, and Mills Creek-Entiat River watersheds (see Figure 1). The project area lies immediately west of the community of Entiat, encompasses the community of Ardenvoir, including public lands north and south and is adjacent to private land.

Applicable Management Areas: Wenatchee Forest Plan Land Management Allocation: Dedicated Old Growth, FS ownership – allocation pending, General Forest, Key Wildlife Range, Scenic Travel – Partial Retention, Scenic Travel – Retention, Unroaded motorized – No 4x4 NWFP Land Management Allocation: Administratively Withdrawn, FS-Ownership Pending, Late Successional Reserve, Matrix

Watersheds: Lower Mad, Roaring Creek, and Mills Creek-Entiat River Watersheds

Purpose and Need: Why do we need to act?

A team of interdisciplinary resource specialists (Interdisciplinary Team, IDT) used the Okanogan-Wenatchee National Forest Restoration Strategy (FRS) (USDA 2012) to guide the analysis by identifying watersheds in need of restoration. The FRS analysis provided details to the interdisciplinary team (IDT) to pursue restoration projects and identify a potential landscape treatment area (PLTA). For detailed information on the FRS reference the Okanogan-Wenatchee National Forest Restoration Strategy (USDA, 2012). The FRS process includes the use of an ecosystem management decision support tool.

These management directions and guidance helped identify several needs in the project area, described below with specific instances of current conditions that have departed from desired conditions.

The IDT also used the Travel Analysis Process (TAP) to determine a desired condition for all roads in the project area. Travel Analysis is a science-based process used “to inform decisions related to: a) identification of the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System (NFS) lands per 36 CFR 212.5(b)(1) and b) designation of roads, trails and areas for motor vehicle use per 36 CFR 212.51” (FSH 7709.55, section 20.2). Travel Analysis informs travel management decisions by examining key issues related to the portion of the forest transportation system under analysis, as



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well as management options and priorities. The process used is described in FSH 7709.55, Chapter 20.

Further guidance in determining the need for the proposal came the Wenatchee National Forest Land and Resource Management Plan ("Forest Plan", USDA 1990), as amended by the Northwest Forest Plan and its subsequent January 2001 Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines ("Northwest Forest Plan" or "NWFP", USDA and USDI 1994). These land management documents provide broad management direction for the Mad Roaring Mills Restoration Project.

The following objectives describe the need for restoration management action within the project area.

Maintain and Improve Forest Vegetation

Objective 1: Reduce the future risk of uncharacteristic wildfire.

Existing Condition: Although much of the project area has burned in past wildfires and current hazardous fuel conditions are generally low, heavy regeneration is occurring and hazardous fuel loading will continue to increase over time.

Desired Condition and Need for Management Action: There is a need to maintain low hazardous fuels conditions to reduce the threat of future uncharacteristic wildfire to adjacent private landowners, support fire as a natural process and provide for long-term firefighter and public safety.

Objective 2: Accelerate development of tree growth and protect existing mature forests across the landscape to provide for future forested landscapes.

Existing Condition: There is currently more forest in the stand-initiation structure class compared to historical reference conditions.

Desired Condition and Need for Management Action: There is a need to thin young stands to accelerate tree growth to promote mature forests on the landscape. There is a need to reduce fuels in and around mature forested stands to maintain existing forest structure on the landscape.

Maintain and Improve Aquatic Habitat

Objective 3: Improve stream and riparian habitat for Threatened and Endangered fish species, including steelhead, bull trout, and spring chinook.

Existing Condition: Some streams are lacking floodplain connection and optimal aquatic habitat functions.

Desired Condition and Need for Management Action: There is a need to improve stream habitat, such as creating side channels and placing large woody debris in the Mad River and Roaring Creek drainages to restore floodplain connection and improve aquatic habitat for listed fish species.

Objective 4: Allow aquatic organisms access to more stream habitat.

Existing Condition: There are currently several barriers in streams that do not allow aquatic organisms to access parts of the stream channel.

Desired Condition and Need for Management Action: There is a need to remove barriers located in streams to allow aquatic organisms to move freely.

Objective 5: Reduce sediment input to streams from roads.



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Existing Condition: The high road density (greater than 2.4 miles/sq. mile in all three project area subwatersheds) within the project area is contributing to aquatic resource damage in some streams.

Desired Condition and Need for Management Action: There is a need to reduce road density on the landscape to reduce impacts to aquatic resources.

Improve the Transportation Network

Objective 6: Establish a sustainable road network.

Existing Condition: The existing road network is difficult to maintain and not all roads are needed for public access or long-term forest management.

Desired Condition and Need for Management Action: There is a need to provide a transportation system that is affordable, safe, and efficient for administration, public use, and protection of National Forest System lands while also providing high quality recreation experiences, resource protection, and access for forest management.



Proposed Action: What are we proposing to do?

The Forest Service is proposing to implement the following actions to meet the objectives described above.

Table 1: Proposed Vegetation and Aquatic Restoration Treatments

Proposed Action	Area
Vegetation Treatments	Acres
Non-commercial, small tree thinning (by chainsaw), piling, pile burning	10,628
(<11 " diameter) non-Late Successional Reserve (LSR)	7,966
(<8 " diameter) within LSR	2,662
Mastication, piling, and pile burn (by ground-based machinery)	167
Prescribed Fire (non-LSR, includes small tree thinning areas)	8,133
TOTAL (acres of treatment)	10,795
Aquatic Restoration Treatments	
Remove and/or upgrade culverts for aquatic organism passage on:	Miles of habitat access restored:
-Windy Cr	0.1 mi
-Mills Canyon	2.2 mi
-Tamarack Cr	0.7 mi
-Moe Canyon	0.5 mi
-Lower Mad River	>10.0 mi
Stream restoration on:	
-Mad River	2.5 mi
-Roaring Cr	1.3 mi
Total Culvert Barriers treated/ Habitat access restored	7 culverts/ 13.5 mi habitat access restored
Total stream restoration	3.8 miles

Vegetation Management

To meet Objective 1 and 2 identified above, the Forest is proposing the following vegetation management actions (see Figure 2):

Non-commercial, small diameter thinning will occur on approximately 10,795 acres. Units that are not located in the Chiwawa Late Successional Reserve (8,170 acres) will remove trees less than 11 inches Diameter at Breast Height (DBH) using chainsaws, except in one unit (167 acres) where ground based mechanical treatment is proposed. Approximately 2,662 acres reside in the Chiwawa Late Successional Reserve where diameter size for thinning will be restricted to less than 8 inches diameter. In mature stands, a portion of the residual trees would be pruned to reduce ladder fuels. Lopping, scattering, piling and pile burning would be used to treat existing



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and activity created fuels. The largest and healthiest trees within the stand would be retained. The treatments would target the removal of ladder fuels and competition near the larger trees that currently exist across the treatment areas and would be designed to increase residual tree diameter growth rates. In young, heavily stocked stands in the stand initiation phase, thinning undesirable species and/or unhealthy growing trees would accelerate the development of mature forest.

For the 167 acre unit that will be treated using ground based mechanical equipment, this would involve using heavy machinery off road that makes strategic entries into the unit to remove small diameter trees and then masticate them on site or create piles to burn. This unit has to adhere to specific standards identified in the soils section of the 'design elements and adaptive management strategies' to minimize soil disturbance.

To meet Objective 1 and 2 identified above, the Forest is proposing the following action (see Figure 2):

Low to mixed severity prescribed fire will be used on 8,133 acres to restore or maintain the desired fire return intervals and fuel loadings consistent with historical fire regimes. These treatments would be designed to reduce the potential wildfire intensity by reducing the quantity of existing dead and down woody material (<3" diameter). Historically, these stands burned on a frequent basis; this treatment would help return them to their natural fire return interval. Prescribed burning in the understory consists of burning brush and small diameter downed wood (<3" diameter) located in forested stands to reduce surface fuels and mimic natural fire regimes under controlled conditions. Ignition occurs under predetermined weather conditions to minimize tree mortality of residual stands.

Aquatic Restoration:

To meet Objective 4 identified above, the Forest is proposing the following actions (see Figure 3):

We will remove and/or upgrade 7 culverts or concrete barriers to allow for complete aquatic organism passage in Windy Creek, Mills Canyon, Tamarack Creek, Moe Canyon, and the lower Mad River. The removal and upgrading of undersized culverts and removal of other existing barriers allows for aquatic organisms to move further along streams and reach habitat that would otherwise be inaccessible. Where roads pose as a barrier to natural stream flow, upgrading for natural hydrological movement improves stream function. This requires heavy equipment in the identified area for a temporary period to remove and replace undersized culverts.

To meet Objective 3 identified above, the Forest is proposing the following actions:

Stream restoration will occur in the Mad River and Roaring Creek drainages. This would occur on 2.5 miles of the Mad River and 1.3 miles of Roaring Creek. At Pine Flats campground we will place large woody debris (LWD), create side channels, and stabilize stream access points to prevent erosion. In the Rothrock, French Corral, and Mad-Tyee areas we will restore floodplain connection by creating side channels and alcoves. We will also remove cement structure located along the Mad River. In the Roaring Creek drainage, we will restore floodplain connection and promote diverse habitat by restoring flow to side channels and increasing large wood structures.

Transportation:

To meet Objectives 6 and 7 identified above, the Forest is proposing the following actions (see Figure 4):

Roads will be upgraded, put into storage, or decommissioned. Additionally, we are proposing to convert a closed road segment into a motorized trail. Some roads are overgrown, inaccessible, and not needed for long-term management, yet remain on the roads database. These roads would be administratively removed from the database (i.e. paper exercise only, no work proposed on the ground and no change in existing access).



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Open Roads: Several routes have been identified on the ground as needed for existing management or recreation access and our database will be changed to reflect what is accurately on the ground.

Road Storage: Roads that are not needed in the short term (10 years) but may be needed for vegetation treatments in the future as forest stands age or for emergency fire suppression, will be hydrologically closed. Roads that are closed remain on the NFS road system for future use. The techniques used to place a road segment in Maintenance Level (ML)-1 "closed road" will be tailored to fit the site conditions on each particular segment of road and can range from the low end of scarifying the road surface a few inches deep to encourage grass growth and installing water bars, to the high end of de-compacting the road bed, scattering large wood, removing culverts, and partial fill pull back.

Decommission Roads: The majority of the road system in project area consists of existing closed roads that are a legacy from the jammer logging systems of the mid-1900s. The effectiveness of closures has varied across the watershed and range from roads that are no longer identifiable on the landscape and are essentially decommissioned, to roads that were not effectively closed and are drivable today. As part of the proposed action, some roads will be decommissioned and removed from the NFS road network. Actions may include removing old culverts, de-compacting road prisms, stabilizing specific areas, partial to full recontouring, scattering large wood, and other actions to return the old road to a more natural state. The majority of the roads proposed for decommissioning are already overgrown, inaccessible and would be removed from the roads database, but no on-the-ground actions would occur.

Decommission Unauthorized Routes: Unauthorized routes include road beds that may be user-created, or not effectively rehabilitated/closed from past management actions. Unauthorized routes are not part of the National Forest roads system. Actions may include de-compacting road prisms, stabilizing specific areas, partial to full recontouring, scattering large wood, and other actions to return the old road to a more natural state.

Convert Road to Motorized Trail: An existing closed road would be converted to a motorized trail and added to the trail system.



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Table 2. Proposed changes to the road transportation network in the Mad Roaring Mills Project Area.

Existing Condition	Existing Road Miles	Proposed Action	Post-Project Road Miles
Open Road suitable for Passenger Vehicles (ML3)	.05	No Change - Maintain as Open Road suitable for Passenger Vehicles (ML3)	.05
Open Road suitable for High Clearance Vehicles (ML2)	178.7	No Change - Maintain as Open Road suitable for High Clearance Vehicles (ML2)	138
		Close (ML1)	17.2
		Decommission	6.4
Closed Road (ML1)- closure has not been effective; currently drivable	25.9	Upgrade Road to be Open and suitable for High Clearance Vehicles (ML2)	0.3
		Effectively Close Road for Long-term Storage (ML1)	8.0
		BPA Access Road	8.3
		Convert to Motorized Trail	0.6
		Decommission	8.7
Closed Road (ML1) – effective closure	128.4	Maintain Closure (ML1)	43.1
		Decommission	75.6
		Convert to Motorized Trail	8.6
Unauthorized Routes; currently drivable	9.3	Decommission	9.2
		Upgrade Road to be Open and suitable for high clearance vehicles (ML2)	0.1
NFS open road miles in the project area	342.35		215.05
New Motorized Trail			9.2
Road Density (mi/mi²)	2.7		2.0



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DESIGN FEATURES INCLUDED IN THE PROPOSED ACTION

Project design features are listed in Appendix 1. The design elements and strategies listed were developed to avoid or eliminate adverse impacts from project activities and are incorporated as an integrated part of the proposed action and incorporated into all implementation phases of the Proposed Action. Project design criteria are based upon standard practices and operating procedures that have been employed and proven effective in similar circumstances and condition; Forest Service Manual and Handbook direction, LRMP standards and guidelines, and other management requirements that apply to the proposed activities.

Alternatives to the Proposed Action: Are there other ways to meet the purpose and need?

The scoping period for the project began on May 12, 2021 and the Forest held a public meeting on May 13, 2021 to discuss details of the project with interested members of the public and partner groups. The Forest received 22 comments through the electronic database (CARA), various emails, and in person comments. Based on input received, the project proposed action was modified and concerns were addressed in the effects analysis. The IDT did not identify any additional issues of concern that would warrant another action alternative.

Project Screening

Legal and Regulatory Considerations

Given the nature of the project, the responsible official requested documentation to demonstrate compliance with the following legal and regulatory considerations in addition to NEPA:

- | | |
|---|---|
| <input checked="" type="checkbox"/> NFMA/Land Management Plan | <u>Special Management Areas:</u> |
| <input checked="" type="checkbox"/> Endangered Species Act (ESA) | <input checked="" type="checkbox"/> Wilderness |
| <input checked="" type="checkbox"/> Sensitive Species (FSM 2670) | <input checked="" type="checkbox"/> Roadless |
| <input checked="" type="checkbox"/> National Historic Preservation Act (NHPA) | <input checked="" type="checkbox"/> Wild & Scenic River Corridor |
| <input checked="" type="checkbox"/> Tribal Consultation | <input checked="" type="checkbox"/> Recommended Wilderness |
| <input checked="" type="checkbox"/> Clean Air Act (CAA) | <input checked="" type="checkbox"/> Research Natural Areas |
| <input checked="" type="checkbox"/> Clean Water Act (CWA) | <input checked="" type="checkbox"/> National Scenic & Historic Trails |
| <input checked="" type="checkbox"/> Pertinent Executive Orders | <input checked="" type="checkbox"/> National Recreation Areas |

Agencies and Persons Consulted

Given the nature of the project, the responsible official consulted the following agencies, organizations, tribes, and persons during development and analysis of the project:



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Agencies

U.S. Fish and Wildlife Service

WA Dept. of Fish and Wildlife

WA Dept. of Natural Resources

Organizations/Businesses

Bonneville Power Administration

Native American Tribes

Confederated Tribes of the Colville Reservation

Yakama Indian Nation

Collaborative Groups

North Central WA Forest Health Collaborative

Entiat River Habitat Subcommittee

Elected Officials

Chelan County Commissioners

Individuals

Local Public active in motorized recreation community

Supporting Project Documentation

Table 1. Applicable project files documentation to support analysis

Documentation Type	File Name (if applicable/needed)
Heritage Report	MRM-Heritage-Resources-Report-Final
Scoping Letter	MRM_SCOPINGLetter_FINAL_V2

Environmental Impacts:

How would our management actions affect the environment?

The following sections describe how the project complies with the relevant laws, regulations, policies, and the land management plan, which provide the basis for thresholds for significance. Consistency with relevant laws, regulations, policies, and land management plan standards ensures that the proposed action does not exceed thresholds for significance and supporting analysis and rationale for consistency are provided to reach a finding of no significant impact (FONSI). The NEPA: Finding of No Significant Impact (FONSI) section includes further analysis prepared to discuss additional effects and address potential issues raised by the public and resource specialists.

Issues Considered for Analysis

The majority of the comments received were supportive of the vegetation management, aquatic restoration, and transportation revision actions proposed. The proposed vegetation management actions were slightly revised due to field observations by specialists during the 2021 field season. Aquatic restoration actions remain the same from scoping as no comments received warranted further issues for consideration. The proposed action to the transportation system, including the motorized trail and seasonal closures, was revised based on comments received from the public and field observations from the team.

The following issues have been identified and addressed for detailed analysis.



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- There are areas within the project area where stream channel conditions do not provide high quality habitat for aquatic species. In-stream restoration work will have a short-term negative impact to ESA-listed fish species and other native fish species.
- Project area road densities are high and are potentially increasing sedimentation in streams, reducing fish access to suitable habitat by acting as barriers to migration, and degrading stream and riparian habitat by occupying and simplifying riparian habitat.
- Water quality may be affected by project activities. A high density road network can result in accelerated erosion and sediment delivery to streams. Other activities such as prescribed fire and vegetation management may result in, or reduce the risk of, accelerated erosion and sediment delivery. High intensity wildland fire can result in accelerated erosion and sediment delivery in the short term that is orders of magnitudes higher than activity related causes.
- The closure and changing of maintenance levels on roads may impact recreational use of those roads.
- Burning debris piles and prescribed fire may result in short-term air impacts to the public recreating in the area and short-term visual impacts.
- Conversion of a closed road segment to a motorized trail will add a motorized recreation opportunity for the public, however, it will add more trail miles to the maintenance system, result in increased noise from motorcycle use, potentially increase sedimentation, and increase the potential spread of noxious weeds.
- Temporary public road closures associated with culvert upgrades.
- The effects of small tree thinning on recreation and visual resources.
- Effects of the proposed road and fuels treatments on native plant communities (including the species of local interest *Iliamna longisepala*).
- The establishment and spread of invasive plants may occur due to proposed activities.
- Young, overstocked stands, stand structure classification, and the presence of medium and large diameter trees have been identified for detailed analysis.
- The use of Ground Based Harvesting equipment in Unit 200 may cause detrimental soil conditions (e.g., soil compaction, rutting, or puddling) that exceed the National and Region 6 Soil Standards.
- Burning debris piles and prescribed fire may result in adverse short-term soil conditions (e.g., hydrophobicity resulting from a high-severity burn).
- Proposed fuels treatments may modify or alter the characteristics of fire behavior on the landscape.
- Proposed vegetation management activities may temporarily modify important habitat for some wildlife species and displace individuals during implementation.
- Proposed changes to the transportation network will result in disturbance and/or displacement of some wildlife during implementation. Road closures and decommissioning will benefit all wildlife species long-term.



Potentially Affected Environment

The Mad Roaring Mills landscape has been impacted by natural and human-caused disturbances over the last several decades, leading to departures from desired conditions needed to sustain healthy forest conditions. When comparing against the expected natural range of vegetation variability, there is a decline of mature forested habitats and an increase in non-forest cover and young, stand-initiation forest cover on the landscape. Additionally, while the Forest's aging road network provides access for recreation and forest management, there are many unused road prisms and some roads that are degrading aquatic ecosystems. Furthermore, there are many streams that have potential to provide habitat for listed fish species through the removal of barriers and restoration of floodplain connection. The project presents an opportunity to improve overall forest health, enhance natural communities, and provide a wide diversity of habitats to meet the needs of various wildlife species. The habitat types in the project area vary greatly due to the large elevational gradient between the Entiat River valley bottom and the high elevations found, particularly in the Lower Mad River watershed. The vegetation types encompass non-forested sage brush ecosystems to sub-alpine forest. This area has been significantly impacted by previous human and natural causes, including agriculture, timber harvesting, roads, private residences, and wildfire. Almost the entire project area has seen wildfire, except for a portion around Crum Canyon, with the earliest documented in 1970. The most recent fire in 2018, Cougar Creek, burned a significant amount of the Lower Mad watershed, approximately 13,492 acres. Given the history of impacts, forest structure is largely heterogeneous throughout the project area and mature and late successional forest lacking. There is an abundance of snags throughout the project area due to recent wildfire. The fire return interval in the project area varies from frequent in the lower elevations dominated by ponderosa pine to infrequent at high elevation sub-alpine forest types. This area is heavily impacted by roads, trails, and user created routes. Many of these roads are in more condition and causing increasing sedimentation to riparian areas. Some roads are identified as closed in the Forest system database, however, field verification shows that some of these routes are open and being used by vehicles. In other instances, closed roads that have become partially revegetated and cannot be driven by full-size vehicles, are being used by motorcycles as routes. Given the lack of vegetation in some areas, cross-country user-created routes are frequent across the landscape.

Consideration of No Action: What would happen if we take no action?

This section discloses the environmental impacts of not taking action. Under the Forest Service's NEPA implementation regulations at 36 CFR 220.7 (b)(2)(i) the Environmental Assessment need only analyze the proposed action and may proceed without condition of additional alternatives. This includes a separate "no action" alternative as long as the analysis of the proposed action clearly contracts the impacts of the proposed action with the current conditions and expected future condition is the proposed action were not implemented (36 CFR 220.7 (b)(2)(ii)).

The direct (same time and place) and indirect (occurs later in time or further in space) impacts of the no-action alternative are that natural succession of vegetation will occur. This will vary depending on site characteristics and severity of past fire. Sagebrush ecosystems will continue to remain non-forested and tree regeneration will occur throughout the project area where possible. Current stands that are in the regeneration phase will eventually become overstocked and tree growth will be limited due to competition. Furthermore, the heavily stocked stands will continue to serve as large fuel reserves for future wildfires. Currently mature stands will continue towards late succession, however depending on the elevation and aspect, these stands are prone to future wildfires. The project area currently has ongoing vegetation projects on approximately 21,270 acres (See Figure 5). The projects involve small diameter thinning (< 11 inches diameter), pile burning, and prescribed fire. These projects will ensure that overly stocked stands continue to mature and that risk from future stand replacement fire is mitigated.

If no roads are closed or decommissioned high road density and increased sedimentation will remain on the landscape in perpetuity. Streams that are identified for aquatic restoration work will continue to



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function sub-optimally. Stream barriers will continue to impede movement for all aquatic organisms. Large areas on the landscape that are undisturbed from motorized recreation will remain at current levels, potentially impacting wildlife such as mule deer and big horn sheep.

Landscape scale vegetation management projects have occurred, are occurring, and will occur within the project boundary on National Forest System lands. These projects involve small diameter non-commercial thinning, small diameter thinning for stand improvement, pile burning, prescribed fire, firewood gathering, transportation system management, recreation management, tree and shrub planting, Beaver Dam Analogs, and non-native plant control actions. Other projects are analyzed under separate NEPA documents.

The most recent Forest Service projects (see Figure 5) and basic action and location in or near the project area include (DM = Decision Memo, DN = Decision Notice, ROD = Record of Decision):

Tillicum Restoration Project (DN, 2016): Landscape restoration project in the Tillicum watershed that lies between the Lower Mad and Roaring Creek watersheds. Activities include non-commercial small diameter thinning, pile burning, prescribed fire, aquatic restoration activities, and road closures and decommissioning. This project is 30% complete, with the implementation of the majority of the small tree thinning planned for 2022.

Mosquito Ridge Domestic Sheep Range Allotment (Yearly) – Domestic sheep are released in allotment around mid-May through mid to late July (75 days) for grazing.

Crum Canyon Project (DM, 2015): Fuels reduction project in the Crum Canyon area that includes non-commercial small diameter thinning, pile burning, and prescribed fire. The project is approximately 25% complete.

Dinkelman Project (DM, 2013): Fuels reduction project in the mostly in the southern portion of the Mad Roaring Mills project area. Activities include non-commercial small diameter thinning, pile burning, and prescribed fire. The project was impacted by the Mills Canyon wildfire and is approximately 20% complete.

West Pine Zone Project (DM, 2008): Fuels reduction project east of the Lower Mad watershed with some areas in the Lower Mad watershed. Activities include non-commercial small diameter thinning, pile burning, and prescribed fire. The project is approximately 90% complete.

East Pine Zone Project (DM, 2008): Fuels reduction project north of the Mills Creek-Entiat River watershed focusing on fuels reduction. Activities include non-commercial small diameter thinning, pile burning, and prescribed fire. The project is approximately 65% complete.

Moe Canyon Project (DM, 2008): Fuels reduction project in the middle of the Mad Roaring Mills project area. Activities include non-commercial small diameter thinning, pile burning, and prescribed fire. The project is approximately 85% complete.

Forest-wide Invasive Plant EIS (ROD, 2017): Forest-wide management of non-native invasive plants. Activities are on-going and involve hand, mechanical, and chemical treatment of non-native invasive plant species.

Cougar Creek Danger Tree CE (DM, 2020): Removal of roadside danger trees from the 2018 Cougar Creek Fire. Involves removal of trees that are dead along certain roads in the Lower Mad watershed up to 150 feet from the road prism. 0% Completion.

Cougar Creek Fire Reforestation CE (DM, 2020): Planting of various tree species in portions of the Cougar Creek Fire where high severity and low regeneration are observed. Completed in 2021.



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Mills Canyon Fire Reforestation CE (DM, 2018): Planting of various tree species and shrubs in portions of the Mills Canyon Fire where high severity and low regeneration are observed. Completed in 2018.

Routine maintenance of roads, trails, and recreational facilities also occur in and around the project area, but are unlikely to have measurable negative impacts to species or their habitat, because the features already exist, and activities such as hazard and danger tree removal are supposed to occur outside of critical nesting period for spotted owls if near any habitat. In general, effects associated with these projects are similar to those described for the proposed project: some short-term negative effects to some species, some, if not all, of which, are discountable or negligible, and likely some beneficial effects, especially over the long term.

Special use permits are considered on an on-going basis but with no regularity and in unforeseeable locations across the District. The most common permits are for road rights-of-way (ROWs) to adjacent private property and utility line ROWs. Each of these instances for new permits requires site-specific environmental analysis and each activity must be completed according to the S&G in the Forest Plan.

Privately-owned lands within the cumulative effects boundary are relatively smaller blocks interspersed within NFS lands and consist of a mix of forest, open land, agricultural fields, and single-family residences and farms. Past, present, and future activities by private individuals include clearing upland and riparian forests and timber harvest. Landowners burn their yards, brush piles, and fields, tear down old structures, and construct new residences and outbuildings. In and around smaller communities, additional land may be cleared of timber or converted from orchard and pasture to accommodate homes and businesses. Utilities have expanded to provide electric, water, and sewer services to growing populations. Use of off-road vehicles is also common on private land and onto NFS land, and vice versa, which can contribute to some erosion and stream sedimentation issues. Natural wildfire is expected to continue to impact all ownerships into the future. Local fire departments and the Forest Service will respond to wildfires on public and private lands and conduct suppression activities, with the primary focus being human health and safety.

Global shifts in climate are contributing to changes in the eastern cascade's ecosystems, which include the Mad Roaring Mills project area. Over the past century, most of the state has warmed one to two degrees (F). Glaciers are retreating, the snowpack is melting earlier in the year, and the flow of meltwater into streams during summer is declining. In the coming decades, coastal waters will become more acidic, streams will be warmer, populations of several fish species will decline, and wildfires may be more common (EPA 2016). Changes in climate, along with stand replacing fire events, are expected to convert low elevation dry Ponderosa Pine Forest into non-forest in some areas. Restored, healthy natural communities have greater resiliency and capacity to adapt to projected climate changes.

The no action alternative would not provide any in-stream restoration and fish-bearing stream habitat would continue to be degraded and impacted by human development. The effect of not completing this work would have long-term, direct, minor, adverse impacts to stream habitat in the project area.

Suitable habitat would continue to be inaccessible to fish and may lead to isolated fish populations. The effect of not removing or replacing fish barrier structures would have a long-term, direct, minor, adverse impact on fish distribution and fish population viability.

The existing levels of road densities have a high likelihood of impacting stream conditions and watershed processes. With no action, there will be long-term, indirect, moderate, adverse effects to watershed conditions and stream conditions.

While the existing number of road-stream crossings per mile is considered low (<1 per stream mile) in each subwatershed, there is a high total number of crossings. With the no action alternative, these crossings will continue to have a long-term, direct, minor, adverse impact to stream and watershed conditions.



Mad Roaring Mills Landscape Restoration Project



All three subwatersheds in the project area have increases in the drainage network due to roads. Lower Mad River and Roaring Creek subwatersheds have potential increases in the drainage network of 27.3% and 29.9% respectively and are considered to be functioning at risk for this indicator. Mills Creek – Entiat River subwatershed has a potential increase of 42.3% and is considered to be not functioning for this indicator. With no action there will be long-term, indirect, direct, moderate, and adverse effects to watershed conditions, water quality and quantity, and stream conditions.

All three subwatersheds in the project area have increases in the ratio of riparian road length to stream length. Lower Mad River and Roaring Creek subwatersheds have riparian road length to stream length ratios of 0.28 and are considered to be functioning at risk for this indicator. Mills Creek – Entiat River subwatershed has a riparian road length to stream length ratio of 0.4 and is considered to be not functioning for this indicator. With no action there would be long-term, indirect, moderate, and adverse effects to watershed conditions, water quality and quantity, riparian habitat and stream conditions.

With no action there would be potential long-term, indirect, moderate, and adverse effects to watershed conditions and water quality where high severity wildland fire occur on untreated acres having soils rated as being susceptible to accelerated erosion and sediment delivery.

No reduction in stand density, reduction in wildfire hazard, restorative prescribed burning operations, road improvements, road closures, road decommissioning, stream restoration, or other connected actions would take place. Ongoing and future activities, such as routine road maintenance, recreation use, and noxious weed control would be expected to occur.

The lack of active management would result in a degradation of forest health and an acceleration of disturbance processes, such as, insect outbreaks and catastrophic wildfires. High density stands would remain and/or increase on the landscape, increasing competition between trees, decreasing the presence of understory vegetation, and encouraging the growth of less fire resistant, shade tolerant species; therefore, increasing the potential for wildfire caused mortality. Desired wildlife habitat components, such as, multiple canopy layers, age class variation and/or desired stand structure stages, would not be promoted.

The effects of no action would allow for continued motorized recreation on closed routes. Fuels would go untreated possibly lead to larger, harder to extinguish wildfires. Large fires limit recreation opportunities during the fire and after as more logs cross roads and trails. Large fires also give the area a different scenic look, although in this area much of the landscape has burned in the last thirty years so visitors are accustomed to the open slopes with pockets of timber. Not replacing culverts that are undersized or failing could lead to severe road damage, which could limit recreation access. No action would have minimal effects on dispersed sites. Scenic values would be subject to the disturbances that occur over time, overstocked stands could be out of alignment with scenic values desired in forest plan.

Puddling potential, compaction, soil rutting, heavy equipment operability, and fire damage susceptibility values would remain relatively unchanged until a disturbance event such as wildfire occurred. Were a natural or human caused fire to occur in Unit 200 in absence of a fuels reduction treatment, 100% of that unit is expected to have a moderate or high likelihood of damage resulting from wildfires (e.g., loss of surface organic material). Potential detrimental soil conditions associated with the use of heavy equipment would be entirely avoided for the no action alternative.

Were no action taken and natural or human-caused wildfires were to occur on the vegetation management units, consumption of the protective litter and duff layer on the soil surface would occur. While this could also happen with the Proposed Action mitigation measures would not be in place to reduce the likelihood of a high-severity crown fire. Loss of productive organic horizons through fire consumption would adversely impact soil productivity.

The resource indicator values would remain relatively unchanged for soil erosion from the motorized trail since erosion from road prisms throughout the project area would continue to some extent with this alternative. The section of trail analyzed for this report is officially closed yet it has semi-regular motorized



Mad Roaring Mills Landscape Restoration Project



traffic. The no action alternative is expected to cause an increased degree of soil erosion since trail improvements to USFS standards would not be completed and motorized use would likely continue.

In summary, without the proposed action, which is intended to restore ecosystem composition and structure, reduce hazardous fuels, restore stream habitat conditions and provide a sustainable transportation network, the project area is expected to trend toward conditions undesirable and uncharacteristic of healthy ecosystem conditions.

National Forest Management Act (NFMA) – Land Management Plan Consistency

The pertinent resource specialists reviewed the proposed action including design features and provided supporting analysis and rationale for determinations in the project record. The following are specialist determinations regarding project consistency with applicable land management plan direction, standards, and guidelines:

The National Forest Management Act of 1976 (NFMA) requires that all activities that occur on National Forest System land must be consistent with approved Land and Resource Management Plans (Forest Plans). This project is tiered to the Final Environmental Impact Statement (EIS) and Record of Decision (ROD) for the 1990 Wenatchee National Forest Plan (USDA Forest Service, 1990), as amended by the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl (USDA Forest Service and USDI Bureau of Land Management, 1994a), the Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (USDA Forest Service and USDI Bureau of Land Management, 2001), and the Final EIS and ROD for the Pacific Northwest Region Invasive Plant Program, Preventing and Managing Invasive Plants (USDA Forest Service, 2005a,b).

Botany: Consistent

Range: Consistent

Cultural/Heritage: Consistent

Recreation: Consistent

Engineering: Consistent

Scenic Resources: Consistent

Fisheries: Consistent

Soils: Consistent

Fuels: Consistent

Silviculture: Consistent

Hydrology: Consistent

Special Management Areas: Consistent

Lands and Special Uses: Consistent

Wildlife: Consistent

Minerals: N/A

Other Resources: N/A

Supporting Project Documentation

Table 2. Applicable project files documentation to support analysis

Documentation Type	File Name (if applicable/needed)
Fisheries Report	Final Aquatics Resources Effects Analysis
Recreation Report	EASpecialistAnalysis_MRM_Rec_Visuals
Botany Report	MRM Botany Resources Effects Analysis 12.17.21
Vegetation Report	MRM_Veg_EASpecialistReport
Heritage Report	MRM-Heritage-Resources-Report

Documentation Type	File Name (if applicable/needed)
Soils Report	EASpecialistAnalysis_MRM_Soils
Fuels Report	MRM_Fuels_report
Wildlife Report	Wildlife Report
Hydrology Report	Final Mad Roaring Mills Hydro Report 20211214
Engineering and Transportation Report	MRM Project – Engineering Report

Other Law, Regulation, and Policy Consistency

Endangered Species Act

Threatened, Endangered, Proposed, and Candidate Species and Critical Habitat

The pertinent specialists reviewed the proposed action and made the following determinations for threatened, endangered and/or proposed species:

Through federal action and by encouraging the establishment of state programs, the 1973 Endangered Species Act provided for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend. Section 7(a)(2) of the Endangered Species Act (ESA) of 1973 (as amended) requires all federal agencies to review actions authorized, funded or carried out by them to ensure such actions do not jeopardize the continued existence of any listed species. **Error! Reference source not found.** summarizes the potential effects of the project to ESA-listed species. Full description of effects available in the project Resource Reports referenced below.

There are no known threatened or endangered plants, or critical habitat, in the project area. If any are found during implementation they will be protected and the USFWS will be consulted.

Table 3. Threatened, endangered, proposed or candidate species and critical habitat effect determinations

Species/Habitat	Status	Proposed or Designated Critical Habitat Present?	Determination	Project documentation
Northern Spotted Owl	Threatened	Yes	NLAA	See Wildlife Report
Canada Lynx	Threatened	No	NLAA	See Wildlife Report
Grizzly Bear	Threatened	No	NE	See Wildlife Report
Gray Wolf	Endangered	No	NLAA	See Wildlife Report
White-tailed Ptarmigan	Proposed Threatened	No	NE	See Wildlife Report
Columbia River Bull Trout	Threatened	Yes	LAA	See Fisheries Report
Showy Stickseed	Endangered	No	NE	See Botany Report
Whitebark Pine	Proposed Threatened	No	NE	See Botany Report
Wenatchee Mountains checker-mallow	Endangered	No	NE	See Botany Report
Upper Columbia Spring Chinook	Endangered	Yes	LAA	See Fisheries Report
Upper Columbia Steelhead	Threatened	Yes	LAA	See Fisheries Report
Columbia River Bull Trout	Threatened	Yes	LAA	See Fisheries Report

NE – no effect; **NLAA** – may affect, not likely to adversely affect; **LAA** – may affect, likely to adversely affect; **No Jeopardy** - not likely to jeopardize the continued existence or adversely modify critical habitat

Supporting Project Documentation

Table 4. Applicable project file documentation to support analysis

Documentation Type	File Name
Wildlife Report	DRAFT_MRM_WildlifeReport
Fisheries Report	Final Aquatics Resources Effects Analysis
Botany Report	MRM Botany Resources Effects Analysis 12.17.21

Sensitive Species (FSM 2670)

The pertinent specialists reviewed the proposed action and made the following determinations for sensitive species:

The Council on Environmental Quality (40 CFR 1502.2) directs that impacts be discussed in proportion to their significance. Some sensitive species require a detailed analysis and discussion to determine effects. Others may not be impacted, impacted at a level that is inconsequential, or impacts are adequately mitigated through the design of the project. Generally, these elements do not require a detailed discussion and analysis. Furthermore, the Wenatchee Land and Resource Management Plan as amended by the Northwest Forest Plan requires specific standards and guidelines (S&Gs) be followed during project development and implementation (USDA 1990, 2004).

Sensitive species that are further evaluated in the wildlife, fisheries, and botany biological evaluations are those species that:

- Are documented within/near the project area,
- Have suitable habitat within the project area
- May be affected by project activities

For the following species, project activities were determined to have no impact:

Wildlife – Common Loon, Sandhill Crane, Bald Eagle, Long-billed Curlew, American White Pelican, Great Grey Owl, Larch Mountain Salamander, Western Pond Turtle, Puget Oregonian, Grand Coulee Mountainsnail, Shiny Tightcoil, Blue-grey Tail-dropper, Western Bumblebee, Suckly Cuckoo Bumblebee, Astarte Fritillary, Meadow Fritillary, Freija Fritillary, Labrador Sulfur, Lustrous Copper, Melissa Arctic, Mardon Skipper, Peck's Skipper, Tawny-edged Skipper, Great Basin Fritillary, Zig zag Darner, Subarctic Darner, Subarctic Bluet, Mountain Goat, Cascade Red Fox

Fisheries – Impacts on Pacific Lamprey, Lake Chub, Pygmy whitefish, Westslope Cutthroat trout, and Inland Columbia Basin Redband Trout are described in the table below and in the Fisheries Report.

Botany - The project area was surveyed for Sensitive plants in June 2021, none were located.

Table 5. Sensitive species impact determinations

Species	Species or Habitat Present in Project Area	Determination*	Project documentation
Northern Goshawk	Yes	MIH	See Wildlife Report
Gray Flycatcher	Yes	MIH	See Wildlife Report
Harlequin Duck	Yes	MIH	See Wildlife Report
Lewis's Woodpecker	Yes	MIH	See Wildlife Report
White-headed Woodpecker	Yes	MIH	See Wildlife Report
Sharp-tailed Grouse	Yes	MIH	See Wildlife Report
Giant Palouse Earthworm	Yes	MIH	See Wildlife Report

Species	Species or Habitat Present in Project Area	Determination*	Project documentation
Grey Wolf	Yes	MIIH	See Wildlife Report
Little Brown Myotis	Yes	MIIH	See Wildlife Report
Big Horn Sheep	Yes	MIIH	See Wildlife Report
Western Gray Squirrel	Yes	MIIH	See Wildlife Report
Pacific lamprey	Unknown	MIIH	See Fisheries Report
Lake Chub	No	NI	See Fisheries Report
Pygmy whitefish	No	NI	See Fisheries Report
Westslope Cutthroat trout	Yes	MIIH	See Fisheries Report
Inland Columbia Basin Redband Trout	Yes	MIIH	See Fisheries Report

NI – no impact; **MIIH**- may impact individuals or habitat, but will not likely contribute to a trend towards federal listing or loss of viability to the population or species; **WIFV** - will impact individuals or habitat with a consequence that the action may contribute to a trend towards federal listing or cause a loss of viability to the population or species

Supporting Project Documentation

Table 6. Applicable project file documentation to support analysis

Documentation Type	File Name
Botany Report	MRM Botany Resources Effects Analysis 12.17.21 also the Botany biological evaluation
Fisheries Report	Final Aquatics Resource Effects Analysis
Wildlife Report	DRAFT_MRM_Wildlife Report

National Historic Preservation Act – Section 106 Review

The pertinent specialist has reviewed the proposed action and made the following determination regarding Section 106 compliance:

Section 106 review meets compliance stipulations of a Programmatic Agreement (see comments section).

Comments

Project would comply with federal laws. The Forest Plan tiers to these laws with no additional standards, therefore the proposed action alternatives meet Forest Plan Standards and Guidelines for Cultural Resources (Wenatchee National Forest Plan, Chapter 4: 66-67). All relevant laws and regulations have been met for this project with the completion of the cultural resources inventory per NHPA-Section 106, the 2020 PA and by providing the interdisciplinary team with appropriate input.

Project design criteria have been developed to avoid impacting sites that are unevaluated or eligible for listing in the National Register of Historic Places. During the Phased approach to NHPA Section 106, additional opportunities for consultations with the Tribal Historic Preservation Officers and their Heritage Programs will arise. As new sites are identified, evaluated and determinations of effect are assessed, avoidance and protection measures will be developed and THPOs will have the opportunity to advise managers of potential adverse effects to cultural resources prior to any implementation.

Supporting Project Documentation

Table 7. Applicable project file documentation to support analysis

Documentation Type	File Name
Heritage Report	MRM-Heritage-Resources-Report-Final

Consultation with Federally Recognized Tribes

Consultation with federally recognized tribes was conducted as follows:

Government-to-government consultations have been initiated between the Forest and interested Tribes. Government to government consultation letters were sent to the Confederated Tribes of the Colville Reservation (CTCR) and the Yakama Nation (YN) on May 14, 2021. Coordination of field surveys and identification of historic properties is underway. Effects will be determined once this has been completed for each phase of the project. Adverse effects to NRHP-eligible or unevaluated sites will be avoided through project design.

Supporting Project Documentation

Table 8. Applicable project file documentation to support analysis

Documentation Type	File Name
Heritage Report	MRM-Heritage-Resources-Report-Final

Special Management Areas

The pertinent specialist has reviewed the proposed action and made the following determinations based on special management area presence, proximity, or lack of:

There are no federally protected areas (wilderness, wild and scenic rivers) in the planning area.

The proposed treatment units include 1,748 acres of the Entiat Inventoried Roadless Area (IRA), where trees would be cut, sold, and/or removed to maintain or restore the characteristics of ecosystem composition and structure. Treatments would occur in portions of Inventoried Roadless Area where stands have become uncharacteristically dense with understory and overstory vegetation, increasing competition for limited nutrient and water resources. Without active management, these areas are at risk for higher mortality from insects and disease and uncharacteristic wildfire effects such as widespread crown fire.

Table 9. Special management area compliance determinations

Management Area Type (Wilderness, Roadless, Wild and Scenic Rivers, etc.)	Applicable Law / Regulation to Demonstrate Compliance With	Rationale for Compliance
Inventoried Roadless Area	Special Areas; Roadless Area Conservation 36 CFR Part 294. (66)9	See Vegetation Report
Wilderness	Wilderness Act;	Not in project area; See Recreation Report
Wild and Scenic Rivers Act	Wild and Scenic Rivers Act	Not in project area; See Recreation Report

Supporting Project Documentation

Table 10. Applicable project file documentation to support analysis

Documentation Type	File Name
Recreation Report	EASpecialistAnalysis_MRM_Rec_Visuals
Vegetation Report	MRM_Veg_EASpecialistReport_Camenson_Draft

Clean Air Act

The pertinent specialist has reviewed the proposed action and made the following determinations regarding the Clean Air Act:

This action is consistent with the U.S. Clean Air Act because air quality will not be affected by the permit 42 U.S.C 7401 et seq. (1972) These actions will meet air quality standards set by the Clean Air Act (as amended 1990) and as regulated through the Washington State Smoke Management Plan (as revised 1998). Burns will be permitted by the State of Washington when conditions are such that emissions will meet standards set forth in the Smoke Management Plan. If conditions arise that may jeopardize emissions standards, then management will not initiate prescribed fires or curtail burns that are in progress.

Supporting Project Documentation

Table 11. Applicable project file documentation to support Clean Air Act compliance

Documentation Type	File Name
Fuels Report	MRM_Fuels_report_1

Safe Drinking Water Act Compliance

The 1996 amendments to the Safe Drinking Water Act require federal agencies that manage lands that serve as drinking water sources to protect these source water areas.

Many communities in central Washington rely on water from the Okanogan-Wenatchee National Forest for drinking. The Safe Drinking Water Act (SDWA) is the 1974 federal law that sets standards for drinking water quality. The law requires actions to protect drinking water and its sources, and sets national standards for drinking water to protect against naturally occurring and man-made contaminants (US EPA 2012). A 1996 amendment to the SDWA requires each state to implement Source Water Assessment Programs (SWAP). The SWAP program in Washington is administered by the state Department of Health Office of Drinking Water. There is one State-designated surface water protection area on private land adjacent to the project area and one ground water protection area immediately downstream of the Mad Roaring Mills project. The Mad Roaring Mills project treatments would be downslope of the surface water protection area and would not adversely affect the surface water source. Less than 5 acres of treatment (hand thinning, pile and Rx burn) would occur within the groundwater protection area and would be separated from the well by a large ridge. Consequently, the project would not adversely impact the water system.

Supporting Project Documentation

Table 12. Applicable project file documentation to support analysis

Documentation Type	File Name
Hydrology Report	Final Mad Roaring Mills Hydro Report 20211214

Clean Water Act

The pertinent specialist has reviewed the proposed action and made the following determination:

The Clean Water Act characterizes water pollution from forest land-use activities as “non-point-source pollution”, and describes the use of best management practices (BMPs) as the most effective means of preventing and controlling non-point-source pollution. It also establishes state roles in water-resource classification, development of water quality standards, and identification of waters that are unlikely to comply with those standards. All relevant BMPs will be followed to ensure compliance with the Clean Water Act.

Supporting Project Documentation

Table 14. Applicable project file documentation to support analysis

Documentation Type	File Name
Fisheries Report	Final Aquatics Resource Effects Analysis
Hydrology Report	Final Mad Roaring Mills Hydro Report 20211214
Soils Report	EASpecialistAnalysis_MRM_Soils

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) of 1996 (as amended) requires the identification of Essential Fish Habitats (EFH) for Federally managed fishery species and the implementation of measures to conserve and enhance this habitat as described in Federal Fishery Management Plans (FMP's). Federal agencies are required to review actions authorized, funded or carried out by them to ensure that such actions do not negatively affect any EFH (those waters and substrate necessary to fish for spawning, breeding or growth to maturity). Federal fisheries within the middle and upper Columbia basin which are covered under the MSA (Pacific Coast

Salmon FMP) include; chinook and coho (*O. kisutch*). The proposed action will not negatively affect any EFH in the project area. See Fisheries Report for reference.

Pertinent Executive Orders

The responsible official and/or applicable specialist(s) have determined the proposed action is in compliance with the following Executive Orders (EO), which were deemed pertinent based on the nature of the project:

EO 11988, Floodplain Management – requires the Forest Service to avoid “To the extent possible the long and short term adverse impacts associated with the occupation or modification of floodplains...” The Mad Roaring Mills project would not adversely affect any floodplain and would improve floodplains on select streams within the project area. The project is consistent with EO 11988.

EO 11990, Protection of Wetlands - requires the Forest Service to “Avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands”. The Mad Roaring Mills project would avoid adverse impacts to wetlands and would improve existing wetland environments. The Mad Roaring Mills project is consistent with EO 11988.

EO 11593, Protection and Enhancement of the Cultural Environment (1971), in part, directs Federal agencies to exercise caution while sites are undergoing evaluation to ensure that cultural resources under their control are not inadvertently damaged, destroyed, or transferred before the completion of inventories and the evaluation of properties worthy of nomination to the National Register.

Once NRHP-eligible and unevaluated sites in the APE have been identified, management recommendations will be developed. Project design features will ensure site protection through avoidance and site monitoring schedules will be implemented.

EO 12898, Environmental Justice – identify and address disproportionately high and adverse effects on minority and low-income populations.

Project activities are anticipated to have neutral effects to the local economy including potential to provide economic opportunities for minority and low-income populations. The proposed project will not reduce access to the national forest for any person or population, and it will enhance accessibility through improved transportation and recreation opportunities.

EO 13007, Indian Sacred Sites – avoid adversely affecting the physical integrity of these sites.

Government to Government consultation throughout the project, along with Section 106 consultation consistent with the Programmatic Agreement will avoid adverse effects to Indian Sacred Sites.

EO 13175, Consultation and Coordination with Indian Tribal Governments - agencies consult with Indian tribes and respect tribal sovereignty as they develop policy on issues that impact Indian communities.

Project has consulted and coordinated with relevant Tribal Governments, including Confederated Tribes of the Colville Reservation and the Yakama Nation

EO 13112, Invasive Species – prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.

The botanical Botany Report provides a brief analysis to ensure that the project design elements would minimize the spread of noxious weeds and invasive plant species. The inclusion of design elements to minimize the spread of noxious weeds and invasive plant species is consistent with the direction of Executive Order 13112.

EO 13186, Migratory Birds – identify actions that may have a measurable negative effect on migratory bird populations.

The project complies with the Migratory Bird Treaty Act of 1918, Executive Order 13186 of January 10, 2001, and the April 11, 2018, Department of the Interior memorandum, and the final rule on regulations governing take of migratory birds (U.S. Fish and Wildlife Service 2021). While the project may result in short-term disturbance to breeding or foraging individuals, the loss of nests of migratory bird species from project-related activities is expected to be very low to the point of not impacting populations; the purpose of the action is not to take migratory birds, their eggs, or their nests.

EO 13855 Promoting Active Management of America's Forests, Rangelands, and other Federal Lands to Improve Conditions and Reduce Wildfire Risk, December 21, 2018

EO 14008, Tackling the Climate Crisis at Home and Abroad – requires a coordinated approach from planning to implementation in addressing climate change.

Proposed project activities would help to build climate resilience in the lower Entiat Valley, under Executive Order 14008, issued on January 27, 2021, by reducing sediment from roads, promoting forest health and resiliency, and restoring habitat to fish bearing streams.

EO 13443, Facilitation of Hunting Heritage and Wildlife Conservation – expand and enhance hunting opportunities.

Hunting opportunities will be enhanced by road closures and decommissioning, and big game species will benefit from increased areas for security, along with cover and forage enhanced by vegetation management activities.

Supporting Project Documentation

Table 15. Applicable project file documentation to support analysis

Documentation Type	File Name
Fisheries Report	Final Aquatics Resources Effects Analysis
Recreation Report	EASpecialistAnalysis_MRM_Rec_Visuals
Botany Report	MRM Botany Resources Effects Analysis 12.17.21
Vegetation Report	MRM_Veg_EASpecialistReport_Camenson_Draft
Heritage Report	MRM-Heritage-Resources-Report
Soils Report	EASpecialistAnalysis_MRM_Soils
Fuels Report	MRM_Fuels_report 1
Wildlife Report	DRAFT_MRM_WildlifeReport
Hydrology Report	Final Mad Roaring Mills Hydro Report 20211214
Engineering and Transportation Report	MRM Project – Engineering Resource Report

State and Local Law

As part of the Healthy Forest Restoration Act of 2004, The Entiat Community Wildfire Protection Plan (CWPP) was created during 2005-2006 to brainstorm and prioritize potential actions to address the most pressing issues that affect the study areas ability to reduce the impacts associated with wildland fires. This planning area was analyzed for treatment but was deferred pending the approval of the CWPP. There has been no further action post the approval of the CWPP.

The Upper Columbia Salmon Recovery Board lists managing fuels to represent/restore natural ecosystem profiles and implement Northwest Forest Plan and Entiat Community Wildfire Protection Plan as a short term restoration action to fish habitat. This is not law, however a local entity that aims to improve fish habitat and improve forest health.

Washington State Noxious Weed law (RCW 17.10.140) requires landowners to control the spread of noxious weeds as required by weed class. There are 3 Class B noxious weeds designated for control in Chelan County that occur in the project area: Dalmatian toadflax, spotted knapweed, and diffuse knapweed and two Class C designated for control (Canada thistle and common St. John's wort). These known infestations will be treated before project activities and monitored and treated after implementation to prevent spread. Therefore, this project is consistent with Washington State Noxious Weed law.

State Clean Water Act (SCWA) - Project design criteria are implemented to reduce or eliminate erosion into surface waterways in the project area. This would comply with SCWA.

Supporting Project Documentation

Table 16. Applicable project file documentation to support analysis

Documentation Type	File Name
Fuels Report	MRM_Fuels_report_1
Botany Report	MRM Botany Resource Effects Analysis 12.17.21
Soils Report	EASpecialistAnalysis_MRM_Soils

NEPA: Finding of No Significant Impact (FONSI)

The Finding of No Significant Impact documents the reasons why an action, not otherwise categorically excluded, will not have a significant effect on the human environment and for which an environmental impact statement therefore will not be prepared. The Finding of No Significant Impact discussion considers all information included in the environmental assessment, including the Potentially Affected Environment, as well as documentation in the project record. Pertinent specialists have reviewed the proposal and, based on their input, the responsible official made the following determinations with regards to the potentially affected environment and degree of effects considered for a Finding of No Significant Impact.

Degree of Effect

The following effects (or impacts) discussions focus on changes to the human environment from the proposed action (or alternatives) that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action (or alternatives) and may include effects that are later in time or farther removed in distance from the proposed action or alternatives.

1. Both short- and long-term effects.

Effects of the proposed action are described below and would be within standards set forth by the forest plan, and consistent with applicable environmental laws.

Silviculture

Direct effects under the proposed action would include reducing stand densities to meet the desired trees per acre of less than 200, thus, allocating more growing space to the residual trees as well as a reduction in total canopy cover in the understory, resulting in a reduced fire hazard. The Proposed Action would also modify patch sizes and promote spatial variation across the project area. This may decrease the homogeneity of the landscape and improve resiliency to major disturbances such as wildfire and insect outbreaks.

Treatments under the Proposed Action would also maintain fire resistant species ponderosa pine and Douglas-fir. Ponderosa pine and Douglas-fir make up the dominant species within the sub-watersheds, at 46% and 36% respectively. In dry forest types, such as those within the project area, ponderosa pine would be targeted as the preferred dominant species. Ponderosa pine is considered one of the most fire resistant and drought tolerant in comparison to other species identified in the project area. This is due to fire resistant adaptations including thick bark, a high crown, self- and fire-pruned branches, large, protected buds, high foliar moisture content, deep roots, and rapid root growth of seedlings (Hood et al. 2018). Another direct effect from the Proposed Action would be promoting and protecting the existing medium and large tree component by removing smaller diameter trees from the understory and reducing the existing TPA across the project area. This may provide a portion of the desired habitat components for the northern spotted owl.

An indirect effect under the Proposed Action would be an increase in structural heterogeneity. A reduction in stand density could accelerate the transition from stand initiation to understory reinitiation—including trees, shrubs, and herbaceous vegetation—and eventually to young forest multi story or old growth structure classes. Other indirect effects under the Proposed Action Others include increased diameter growth rates among the residual trees. Intermediate treatments and prescribed fire in young, overstocked stands would modify forest health, structure, and composition. Research shows that lowering stand densities enhances tree growth, reduces competition mortality, and increases stand resiliency to disturbances and climate change (Zhang et al. 2019).

Long term, moderate, and beneficial impacts would occur with these treatments on young, overly dense forest stands. Thinning treatments, along with prescribed fire treatments, would help reduce stand densities to improve forest health, build resilience to insect and disease outbreaks, and restore fire on the landscape, helping maintain fuel loadings. Road maintenance would not have a measurable effect on overstocked young forest stands because this action focuses on vegetation brushing and pruning within approximately 5-10 feet from the roadway and would cause little overall change in stand structure, with immeasurable impacts on forest structure and composition.

Long term, moderate, and beneficial impacts would occur with promoting medium and large trees. Promoting larger trees across the landscape would help maintain important features for wildlife habitat and provide some resiliency to disturbances. Large diameter ponderosa pine and Douglas-fir are also less susceptible to wildfire caused mortality.

Road maintenance would not have a measurable effect on the presence of medium to large trees because this action focuses on vegetation brushing and pruning within approximately 5-10 feet from the roadway, and no medium to large trees would be removed unless they are considered a danger tree.

Fuels

Direct effects of prescribed burning will include combustion of flammable materials as well as producing potentially large quantities of smoke depending on how many acres were burned. Small surface fuels (under 3 inches) will be reduced or even consumed down to nothing which is the target for reductions. Larger fuels will be reduced; however, those reductions will strive to keep reductions in the 25-50% range and consistent with Forest Plan standards. Prescribed burning will reduce fuel loadings (direct effect) which in turn will bring fireline intensities down (indirect effect the following summer) to lower than current levels. This will be accomplished by burning in the spring and or fall outside the peak of wildfire season.

Direct effects of non-commercial thinning and hand piling will include the cutting of small trees to create spacing. Indirect effects of non-commercial thinning and hand piling include increasing tree spacing as well as reducing ladder fuel opportunities that will help to create a stand that is not at risk to crown fire. These actions will prepare the stands to be more fire resilient by growing larger trees and producing thicker bark. Indirect effects of burning the hand piles may include the creation of areas of intense soil heating, however results from a Tahoe case study further suggest that wood size is the primary factor controlling soil heating during pile burning (Busse et al 2014). Thinning from this project will be less than 11 inches in diameter which is considered small to medium sizes for fuels. Determining ground coverage and ensuring that it does not exceed 15% (or 250 piles per acre) when practicable, is an easy step that can be estimated from a simple field measurement of the number of piles per (acre) within a treatment unit (Busse et al 2014). Design features incorporated into the proposed action will reduce these potential soil effects.

Aquatics

The Mad Roaring Mills Restoration Project is expected to improve water quality, riparian function and channel morphology, and watershed condition. The proposed action would reduce total open road density and riparian open road density in all project area subwatersheds. In addition, the proposed action would remove 29 road-stream crossings, improve 3.8 miles of instream fish habitat, and restore access to 3.5 miles of current and potential fish habitat. Through these actions, watershed condition would be improved through a reduction in erosion and sedimentation from the road system, improvement in stream and riparian condition, and through vegetation treatments to reduce the risk of effects to water quality and watershed condition from high severity fires.

Stream restoration projects will have a short-term negative impact on fish, water quality, and habitat, but, in the long term, will have a beneficial effect on fish distribution, population dynamics, stream flow, sedimentation, and instream habitat conditions.

Transportation

The following summarize the effects to the transportation resource from the proposed action. Approximately 31.95 miles of previously open roads would be closed because they are not needed in the immediate future for land resource management. Approximately 161.82 miles of roads would be decommissioned because they are no longer needed for land resource management in the foreseeable future, or because they are unauthorized roads that are not needed for NFS purposes. Approximately 18.77 miles of currently open and closed roads would be assigned as "Administrative Use" only and closed with a gate to provide continued access by BPA and Forest Service personnel. Approximately 0.23 miles of existing NFS road would be converted to the National Forest Trail System. Approximately 9.6 miles of existing NFS roads will have dual purpose as a system Motorcycle Trail.

Wildlife

For a detailed description of effects to wildlife, please refer to the Wildlife Biological Evaluation. The direct and indirect effects to wildlife species are dependent on the species and their associated habitat type. In units where mature forest currently exists and we are thinning small diameter trees in the understory, thinning would result in minimal impacts to wildlife through initial habitat modification by reducing underbrush/ladder-fuel levels during thinning. In addition, the presence and noise generated during vegetation treatments could result in a temporary disturbance of wildlife and potential disruption of individuals into adjacent habitats (with the disturbance/disruption lasting until the active treatment activities ceased). Thinning in combination with the prescribed fires, would reduce the extent of undergrowth in affected areas, they would also reduce cover that may be used by various wildlife species. Wildlife may

also be disturbed during prescribed burns and from associated smoke, and relocate to unaffected areas away from these controlled fires. In areas where forest structure is currently in the stand initiation phase, thinning would modify habitat for early seral dependent species, along with the disturbance effects described above. The duration of effects from disturbance is equal to the time required for implementation. The duration of habitat modification is also considered relatively short term as regeneration of shrubs can occur within 1-3 years post implementation, and regeneration of trees will likely occur within 10 years.

Long term beneficial impacts to wildlife habitat would result from vegetation management activities. The proposed thinning would promote the conservation of existing mature forest and accelerate the growth of young over-stocked forest. Medium and large-diameter trees (> 11 inches DBH) would be retained across the landscape, including standing snags and large woody debris. This, in combination with prescribed burns, would reduce the potential for stand-replacing crown-fires and insect outbreaks in forested stands while increasing tree vigor and accelerating the attainment of large trees and old-growth characteristics.

The proposed watershed and aquatic restoration actions would benefit all wildlife that utilize riparian habitat. Restoring flood plains and instream habitat improves riparian corridors, including riparian vegetation. Proposed aquatic restoration actions also include some road closures and decommissioning, which would reduce road densities within the Project area that are currently being used by motorized vehicles. This long-term reduction in road densities could benefit wildlife species in the form of a providing secure habitat (areas of undisturbed habitat from human presence and noise), as well as reduced invasive weed vectors (i.e., weed populations are often higher along roads compared to un-roaded areas), and reduced human presence in areas where roads are decommissioned (compared to areas that contain roads). Depending on the level of action required to effectively close or decommission a road segment, disturbance to individuals during implementation would be similar to as described above.

The implementation of establishing a motorized trail in the Mills Canyon area will negatively affect wildlife through increased human disturbance caused by motorcycle noise. However, this area is already frequented by motorcycle enthusiasts, therefore potential impacts are expected to be minimal.

Soil

Direct and indirect effects to the soil resource would occur as a result of using ground based machinery to thin trees, prescribed fire, and upgrading, decommissioning, or closing roads. The direct and indirect effects of the proposed action are described in detail in the Soils Report. Increased surface water run-off or debris flows from compaction or high-severity burned soils could result from a high-intensity storm event. These direct and indirect effects would be reduced or eliminated by following the soil design criteria and mitigation measures (Appendix 1).

The effects to soils from the use of heavy equipment are not expected to cause widespread puddling or rutting, except for the Ardenmont soil type, which is vulnerable to rutting. The Ardenmont and Kloochman soils are poorly suited for heavy equipment operations. Both components primarily occur on steep slope gradients (30–60%), the majority of which exceed the slope severity threshold for Best Management Practices (BMPs) (which will reduce heavy equipment traffic in those units). The Tillicum component is the most abundant (35.7%) soil component in Unit 200, and combined with the Chumstick soil (1.8%), are both well-suited for heavy equipment on lower slope gradients (<30%). There is a medium compaction potential for 98.2% for Unit 200 which would be mitigated by operating on unsaturated soils, over slash, and avoiding more than one pass over the same area whenever possible. In addition, implementing specific erosion control measures such as constructing water bars, placing slash on bare soils, and vegetating disturbed soils would conserve the soil resource.

Recreation

Direct and indirect effects to recreation visitors could occur as a result of implementing the proposed action. Road closing and decommissioning could limit or discontinue recreation opportunities long term, into foreseeable future, that visitors are currently using. Since much of this use is occurring on currently closed or non-system roads, impacts cannot be quantified as they would be on system trails. Although no formal system trails exist in the area, users have been riding various routes and roads and are accustomed to that norm. A deviation from this with closed and decommissioned roads that may not be useable could frustrate users who are used to current conditions. Under the proposed action, there remains 215 miles of road open to motorized vehicles. The addition of a new trail (9 miles) open to motorized users would be a positive effect. This trail, although managed for single track motorized use would be open to non-motorized users as well.

Closing or decommissioning roads may take away dispersed site opportunities, for example at the end of the 5270-115 there is a small site that gets low use. Closing or decommissioning the road would remove access to this site, and

directly effect a small number of forest users. The majority, greater than eighty percent, of large, well-used dispersed sites in the area will remain accessible post implementation of the project. Noise from thinning operations from chainsaws or machines could cause a short-term impact to recreationists in the area where activity is occurring.

Smoke from burning piles or prescribed fires could cause short term impacts, one to three days per event, to air quality and the viewshed. Culvert replacement on roads could cause short term impacts, less than 1 hour, delays to road users when being installed. If a longer term, multiple week, closure is needed for installation, a detour can be established for road users. There could be a short-term effect, less than three weeks, to campers during the stream restoration work in and near Pine Flats Campground. The campground, six sites and one group site, 108 maximum persons at one time will most likely be closed during operations. Campers would be displaced to other campgrounds in the area or dispersed sites, although this work occurs in July at the height of camping season, the Entiat Valley usually has capacity at the campgrounds outside of holiday weekends where campers could go. There is also a trailhead in the campground that would be closed, preventing users from accessing the Mad River Trail, a short-term impact of three weeks or less. Trail users can access the Mad River Trail from the Wenatchee River Ranger District, or from an informal access off the Camp Nine road as alternatives.

Direct and indirect effects to scenic resources would primarily be beneficial. Successful road closing and decommissioning could, over time, remove the linear features from the viewshed. Currently, due to the openness of the landscape, as you look across viewsheds many linear lines from old roads can be seen. Vegetation is slow to grow in this area, so limiting use and encouraging vegetation growth would allow these lines to fill in and blend in. If decommissioning includes recontouring, recovery time is faster. Vegetation treatments will have short term negative effects to scenic quality, one to five years, in the form of piles, burn scars from piles, stumps and slash. Long term, over five years, scenic values can be enhanced by vegetation treatments that allow stands to accelerate growth of large trees. In the Dispersed Recreation, Unroaded, Motorized (RE-2) and Retention areas managed for the Visual Quality Objective Retention, effects will be need to be managed through design criteria to ensure activities blend with established landscape. The objectives of the project meet the management direction for Partial Retention, to establish larger trees and provide a diversity of landscapes. General Forest allocation allows for maximum modification of the scenic values, project goals and prescriptions are well under this guideline so there should not be an impact to general forest visual quality objectives.

Combined with past, present and reasonably foreseeable actions the effects to recreationist activity that occur on system roads and trails in the area should be relatively small, as minimal activity has occurred lately and the activities proposed should be spread through time and space enough that disturbance to activities is a minimum. As the non-system roads and trails are closed, the new trail and shared use network will still allow use to occur over a large area. Scenic values and objectives would be enhanced and protected as effects from implementation fade over time.

Botany

Under the proposed action, 443 acres of roadbed and adjacent habitat would be restored to habitat for native plants. Seven culverts would be removed, allowing the restoration of riparian habitat. The conversion of roadbed to motorized trail would reduce the footprint of the road, but because it will still be traveled by motorized vehicles it will remain a vector for invasive plant spread. Design features requiring the treatment of invasive plants and ongoing monitoring and treatment will reduce the spread and establishment of invasive plants.

Non-commercial thinning would remove small trees, reducing the area shaded by conifers and opening more growing space for understory plants. This would likely result in an increase in biodiversity as more shade intolerant plants are able to move into the units. This could also favor the establishment of invasive plants, which have a competitive advantage in early seral (unshaded) conditions. Design features requiring that any invasive plant populations in or adjacent to the unit be treated prior to implementation, and that monitored for three years after implementation will help prevent the spread of invasive plants into the thinned areas.

The 167 acres that would be thinned using machines would be more vulnerable to invasive plant invasion due to the increase in ground disturbance from the machine travel. In addition, native plants under the machine constructed piles would be killed when those piles are burned, and there would be a short-to mid-term (5-10 year) reduction of plant cover on the pile scar. The burn pile scars would be vulnerable to invasion by invasive plants. Multiple design features (in both the soils and botany section) are included to mitigate the effects of machine thinning.

Burning of hand-constructed piles would result in mortality of any plants underneath the piles, and a short-term (3-5 year) reduction of plant cover on the pile scar. Native plants should eventually re-colonize the scar but until they do the scars would be more susceptible to infestation by invasive species.

Under burning effects are more similar to wildfire effects than pile burning, however native plants are most adapted to dry season (summer) fires and all the prescribed burns below 4,000 feet elevation are likely to take place in the spring. Wildfires typically occur when perennial native plants have already reproduced and are dormant, and annuals have already produced seed. Burning in the spring may directly affect some native plants that are actively growing, causing mortality or reduced vigor, and may interrupt the timing of pollinator - plant relationships reducing reproductive success.

2. Both beneficial and adverse effects.

As described above and in the Environmental Assessment, the interdisciplinary team did not identify any significant adverse effects associated with implementing the proposed action. Overall, implementing the project is expected to be beneficial.

3. Effects on public health and safety.

As described above and in the Environmental Assessment, the interdisciplinary team did not identify any effects associated with implementing the proposed action that would have significant adverse effects on public health and safety.

4. Effects that would violate Federal, State, or local law protecting the environment.

The interdisciplinary team did not identify any effects associated with implementing the proposed action that would violate Federal, State, or local law protecting the environment. See determinations above in Other Law, Regulation, and Policy Consistency section.

Comment Period

Information on the proposed project along with the associated Environmental Assessment document are available online at: <https://www.fs.usda.gov/project/?project=59963>.

We invite your comments to ensure that the full range of issues are considered, and all major issues are addressed. Pursuant to 36 CFR 218.25, comments on this proposed project will be accepted for 30 days following publication of the legal notice in the newspaper of record (Wenatchee World). In the event that the comment period ends on a Saturday, Sunday, or Federal holiday, comments will be accepted until the end of the next Federal working day. After consideration of comments received during this 30 day comment period, a draft Decision Notice (DN) will be issued. The draft decision will be subject to an objection process pursuant to 36 CFR 218, sub parts A and B. Only those who have submitted timely, specific written comments during a public comment period established by the Responsible Official will be eligible to file an objection (36 CFR 218.5).

Comments should be within the scope of the proposed action, have a direct relationship to the proposed action, and must include supporting reasons for the Responsible Official to consider (36 CFR 218.2). Other eligibility requirements are defined by 36 CFR 218.25(a)(3). Individual members of an organization/entity must submit their own individual comments in order to have eligibility to object as an individual. A timely submission will be determined as outlined in 36 CFR 218.25(a)(4). It is the responsibility of the sender to ensure timely receipt of any comments submitted.

Electronic comments are preferred and must be submitted through the web-based Comment and Analysis Response Application (CARA). The project comment page can be located at: <https://cara.ecosystem-management.org/Public/CommentInput?Project=59963>.

Attachments to comments must be submitted in only one of the following three formats: Microsoft Word, rich text format (rtf), or Adobe Portable Document format (pdf). Emails submitted to email addresses other than the location listed above or in other formats than those listed or containing viruses will be rejected. Comments sent by mail must be postmarked no later than 30 days from the legal notice publication and sent to: District Ranger Kari Grover-Wier, c/o Ana Cerro, Project Lead, at Entiat Ranger District, 2108 Entiat Way, Entiat, Washington, 98822. Those submitting hand-delivered comments may do so during regular office hours, 8:00AM to 4:30PM, except 12:00-12:30PM, Monday through Friday, except legal holidays.

Comments received including names, addresses, and any other information provided with the comments, will be considered part of the public record and will be subject to the Freedom of Information Act (FOIA) and released if requested.

Appendix 1

Design Elements and Adaptive Management Strategies

The following design elements and adaptive management strategies would be incorporated into all implementation phases of the selected Action Alternative.

Fisheries, Aquatics, Hydrology

For aquatic restoration actions, such as culvert removal/replacement, in-stream channel work, floodplain restoration, and road treatments for aquatic benefit, design criteria from the following documents will be used:

- Programmatic Biological and Conference Opinions (BiOps) for Aquatic Restoration Activities in Oregon, Washington and portions of California, Idaho and Nevada (ARBO II; NMFS 2013 and USFWS 2013)
- U.S. Forest Service Aquatic Restoration Program Regional General Permit (RGP-8) (USACE 2011)
- Memorandum of Understanding between Washington State Dept. of Fish and Wildlife and USDA Forest Service, Pacific Northwest Region (USFS and WDFW 2012)
- USFS National Best Management Practices for Water Quality Management on National Forest System Lands (BMPs; 2012)

All vegetation treatments will follow conservation measures from the Programmatic Biological Assessment for Low Impact Management Activities on the Okanogan-Wenatchee National Forest (2019). This includes, but is not limited, to the following:

- No use of mechanized equipment off-road in Riparian Reserves during vegetation treatments.
- No machine piling in Riparian Reserves.
- Handline construction may occur within Riparian Reserves if it is constructed outside the inner gorge and is completed with permission from district aquatics staff.
- No-cut buffers for vegetation treatments along streams will be as follows:

Stream Flow Regime	Minimum no-cut buffer by proximity to ESA-listed fish*		
	0 feet to 1,000 feet	1,000 feet to 1 mile	Greater than 1 mile
Perennial	150 foot buffer	100 foot buffer	50 foot buffer
Intermittent	100 foot buffer	50 foot buffer	30 foot buffer

*ESA-listed fish are present in Roaring Creek and the Mad River

Additionally, all vegetation treatments and related actions will follow USFS National BMPs.

Soils

Mitigation measures designed to protect the soil resource have been summarized here for the following activities. All other soil protection measures not discussed here are covered by Soil & Water Conservation Practices (SWCP) and Best Management Practices (BMP), which are incorporated into standard land management contracts.

- Time soil disturbance activities such as road decommissioning, stand improvement, and stream channel work when soil is not saturated with water.
- Construct waterbars within handlines on slopes more than 5% to minimize rill erosion on bare mineral soil. Waterbars will remain for the duration of time that handlines are in place.

- Road decommissioning activities on legacy roads would decommission roads to a standard which prevents use by motorized vehicles, and returns the road to a stable hydrologic state. This may include as appropriate for site conditions, re-contouring all or sections of the prism, decompaction of the road prism, installation of drainage features, removal of culverts, slashing, and seeding (with District Botanist recommended seed mix) on bare mineral soil. Decommissioned road would be removed from the road system.
- Maintenance Level (ML) 1 & 2 roads will be hydrologically stabilized by removing culverts, decompacting the road prism, adding coarse woody material (CWM) and slash (fine woody debris), seeding the roadbed, and closing/recontouring the entrance to these roads.
- Hand Pile sizes shall be less than 6-8 feet in diameter so localized areas of soil disturbances will be less than about 50 square feet in size.
- Pile burning should occur during moist conditions to minimize duff consumption and high severity burn impacts on soils.
- Where feasible, pile and burn slash where Detrimental Soil Disturbance (DSD) already exists, such as on old log landings, skid trails, and roads associated with the past harvest units.
- Upon completion of prescribed burning or maintenance burning, at least 80 percent ground cover (organic material and rock) shall remain on site to prevent detrimental accelerated erosion and loss of soil productivity. On sites where ground cover is less than 80 percent prior to burning, consumption and loss of ground cover should not exceed 15 percent. Ground cover includes duff, organic soil horizons, basal area of vegetation, slash, CWM, and surface rock fragments. Site factors that would indicate a need for woody debris include, but are not limited to, continuous grades, water concentrating topography, proximity to wet or riparian areas, and bare mineral soil.
- Use pre-existing skid trails whenever possible. Place skid trails a minimum of 100 feet apart, except where tighter spacing is necessary to complete the prescribed treatment (thinning & piling), 50' spacing is allowed. Mechanical equipment must travel over slash mats (placed over 65 – 70% of the skid trail surface to a depth of 2 – 3").
- Tractor skidder/subsoiler operations would be confined to slopes that are $\leq 35\%$. Terrain or vegetation obstructions, as well as drainage avoidance may necessitate short travel distances (<150 feet) on slopes >35%, but should never exceed 45%.
- In the event ground based mechanical equipment requires more than one pass, a winged subsoiler will be used to decompact the soil to a depth of 1 to 2 inches below the compacted layer, or to the depth of a limiting layer (e.g., bedrock, hardpan), whichever is shallower.
- Place slash on bare soil that was exposed to prevent erosion.
- Allow time for nutrients to leach from activity generated slash prior to burning. The slash shall remain on site for at least one winter after cutting to allow for initial decomposition and nutrient leaching.
- CWM larger than 15 inches in diameter will not be intentionally ignited during hand lighting operations. However, fire may burn into large CWM and combust various pieces.
- Following implementation, restoration of disturbed soil conditions that exceed Regional and Forest Plan soil Standards would be mitigated by the USFS using BMPs.

Table 17. Coarse Woody Material (CWM) requirements for long term soil productivity

Potential Vegetation Group	CWM
Warm, Dry Ponderosa Pine and Douglas-fir Habitat Types	5 to 10 tons/acre
Cool, Dry and Moist Douglas-fir Habitat Types	10 to 20 tons/acre
Cool Lodgepole Pine and Lower Subalpine Fir Habitat Types	8 to 24 tons/acre

Botany and Invasive Plants

- Avoid any fuels or silvicultural treatments (thinning, piling, burning) within 100 feet of populations of the Sensitive plant *Iliamna longisepala* to prevent the spread of invasive plants into the populations, to avoid changes in microsites, to allow seedlings to become established and produce seed, and to avoid adverse cumulative effects with sheep grazing.
- An invasive plant prevention strategy (as required in the R6PNW Invasive Plant EIS) will be developed by the District Invasive plant manager for each treatment unit in coordination with Range Technician, Fuels Planner, Forester, and Fish biologist, in order to prevent the spread of invasive plants as a result of project activities. Prevention strategies could include timing, invasive plant treatment before, after, or both before and after depending on the species of concern (and as covered in the pending Forest-wide Invasive Plant EIS), releasing biological controls, avoiding disturbing highly infested areas, monitoring of disturbed areas, and seeding with local, native grass seed as needed.
- Clean and inspect heavy equipment prior to entering Forest Service Land.
- The use of “weed free” straw and mulch is required.
- If any Threatened, Endangered, Sensitive or Survey and Manage plants are discovered during implementation they will be protected from damage and changes to microsite conditions.
- Avoid constructing handpiles on, or physically damaging the mountain ladies slippers (*Cypripedium montanum*).
- Areas disturbed by heavy equipment and pile burning should be monitored for invasive plant invasion for 5 years. Any new populations should be treated immediately to prevent further spread (Early Detection Rapid Response). These disturbed areas should be seeded with local native plants and mulched, preferably with onsite materials, if needed.
- Whitebark pines (*Pinus albicaulis*) will be protected from project activities. Stands in potential habitat for whitebark pine will be surveyed for whitebark pine prior to implementation and all whitebark pine trees found will be protected.

Wildlife

- All known listed Proposed, Endangered, Threatened, or Sensitive species, along with those discovered prior to or during implementation of project activities would be protected. Implementation activities, including contracts, would be modified or cancelled if protective measures proved inadequate, new species were discovered within treatment units, or a new species is listed that could be affected.
- Retain and protect, to the extent practical, existing down wood (>9” diameter) and snags (>9 inch DBH) due to many units are below standards. Avoid mechanical impacts and movement of down wood when possible, and leave felled snags on site.
- Piles shall not be placed on or in close proximity to stumps or down logs >9” diameter; and shall be a minimum of 10 feet from the base of any live tree or snag (where possible), unless a live tree is designated for snag creation. Snags can be created by positioning piled materials near the base when desirable.
- Avoid piling slash on arrowleaf balsamroot to protect Chelan mountainsnail habitat
- Leave 1 pile unburned per 5 acres in order to provide habitat for small mammals. The piles close/adjacent to snags, large down wood, root wads, ect are preferred to be left unburned.
- Down wood > 12 inches diameter and longer than 20 feet should be retained. In areas where the material does not exist, thinning slash and down wood > 6 inches diameter should be retained instead.

Vegetation

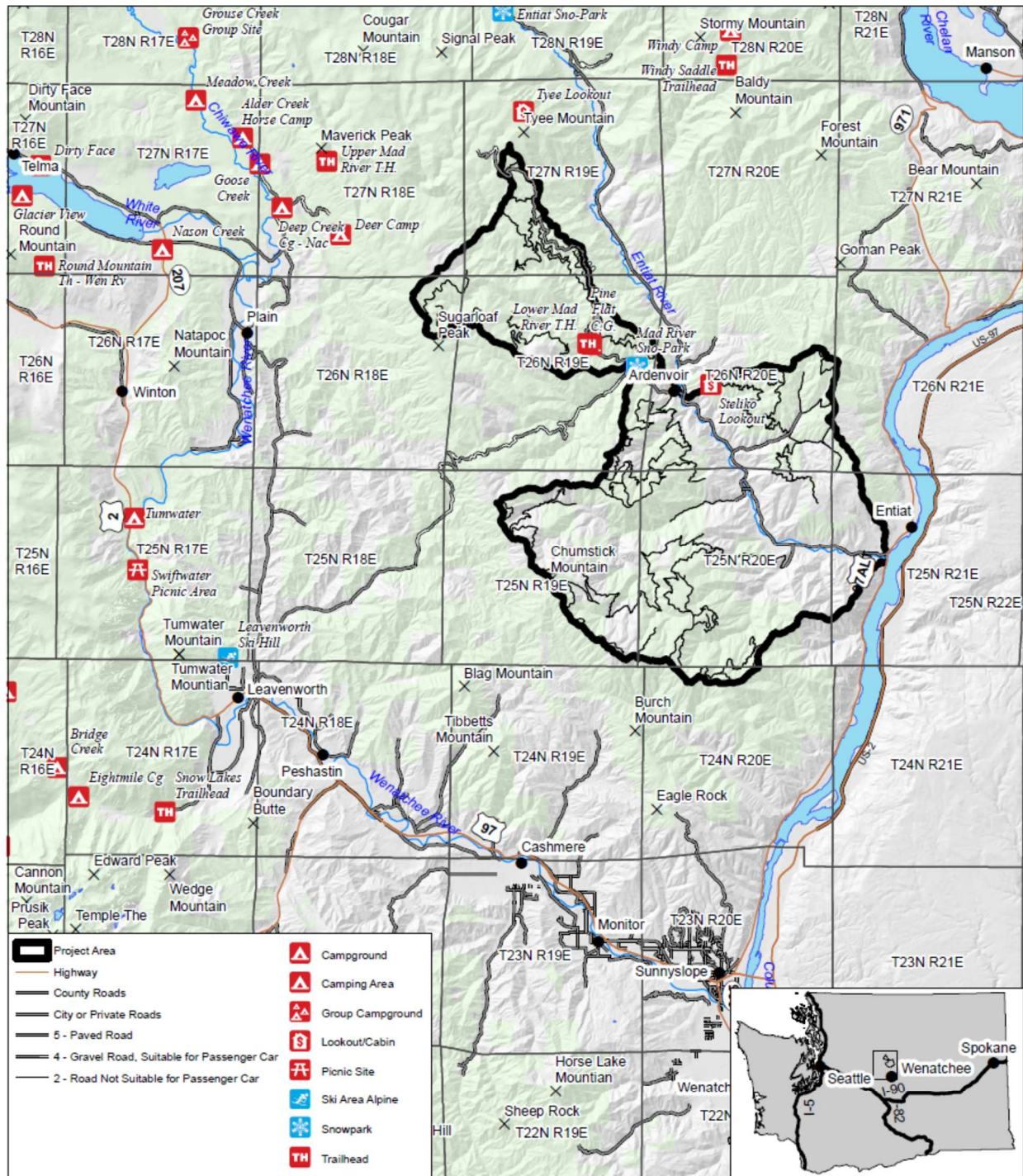
- A site specific silvicultural prescription shall be prepared for all activities proposing the management of trees or timber stands to meet resource objectives. All prescriptions will be prepared or approved by a certified silviculturist.

- A clump and gap method will be used in thinning prescriptions to mimic what may have occurred on the landscape naturally rather than a plantation with set spacing requirements.
- Western redcedar, western larch, western white pine shall be retained during small tree thinning operations. These species provide diversity across the watershed.
- Where feasible, Rx fire ignition patterns should be adjusted to avoid mortality to western redcedar, western larch, and western white pine.
- Thinning would be restricted to trees less than 11 inches DBH.

Range

- Annual operating and implementation plans for range use, invasive plant management, non-commercial thinning, prescribed burning, and riparian treatments would be coordinated annually, to reduce or avoid potential conflicts.
- Range permittees would be notified prior to herbicide application and applicable management practices would be followed.
- Retain adequate access to grazing areas when decommissioning roads or reducing maintenance levels to ML-1 by providing an adequate area (~300 feet) at the closure, or identifying an alternative location prior to road treatment. Relocated and new bed-grounds would meet established bed-ground criteria.
- Deferment of grazing for up to two seasons would be implemented prior to and following prescribed fire

Figure 1: Mad Roaring Mills Vicinity Map



The USDA Forest Service makes no warranty, expressed or implied, including the warranties of merchantability and fitness for a particular purpose, nor assumes any legal liability or responsibility for the accuracy, reliability, completeness or utility of these geospatial data, or for the improper or incorrect use of these geospatial data. These geospatial data and related maps or graphics are not legal documents and are not intended to be used as such. The data and maps may not be used to determine title, ownership, legal descriptions or boundaries, legal jurisdiction, or restrictions that may be in place on either public or private land. Natural hazards may or may not be depicted on the data and maps, and land users should exercise due caution. The data are dynamic and may change over time. The user is responsible to verify the limitations of the geospatial data and to use the data accordingly.

Mad Roaring Mills Vicinity Map

Map Produced 1/26/2022



Figure 2: Mad Roaring Mills Proposed Vegetation Treatments

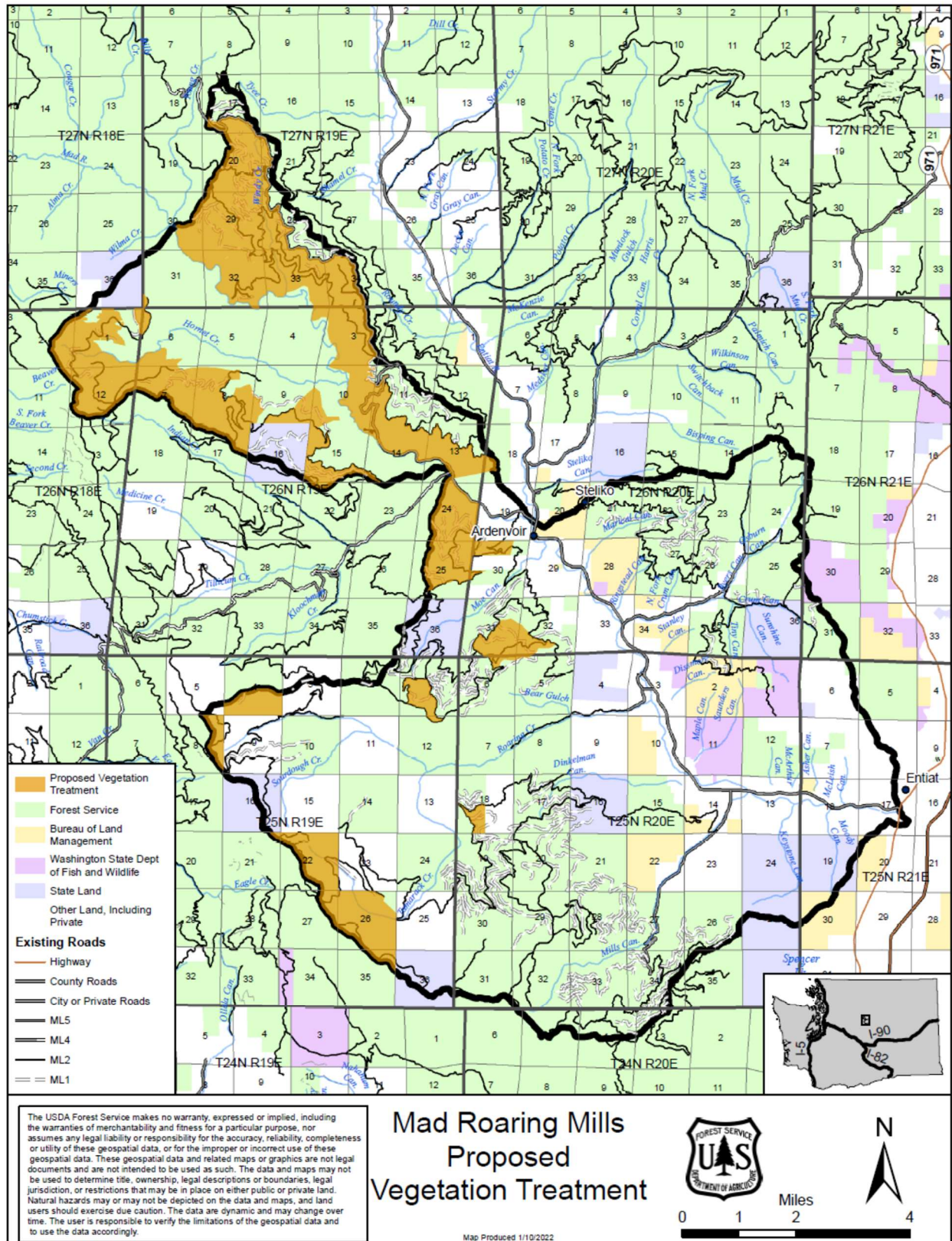


Figure 3: Mad Roaring Mills Aquatics Treatments

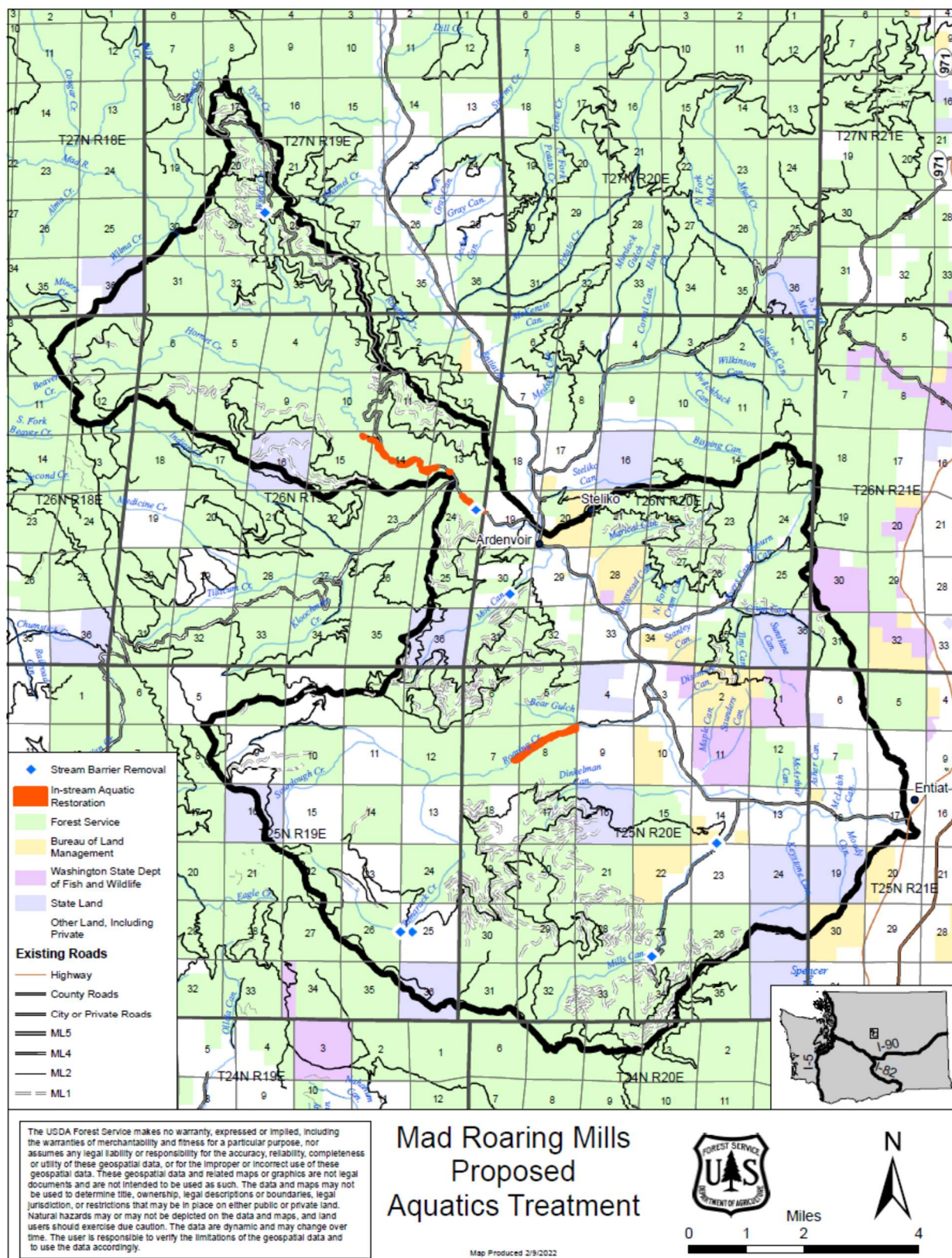


Figure 4: Mad Roaring Mills Proposed Transportation

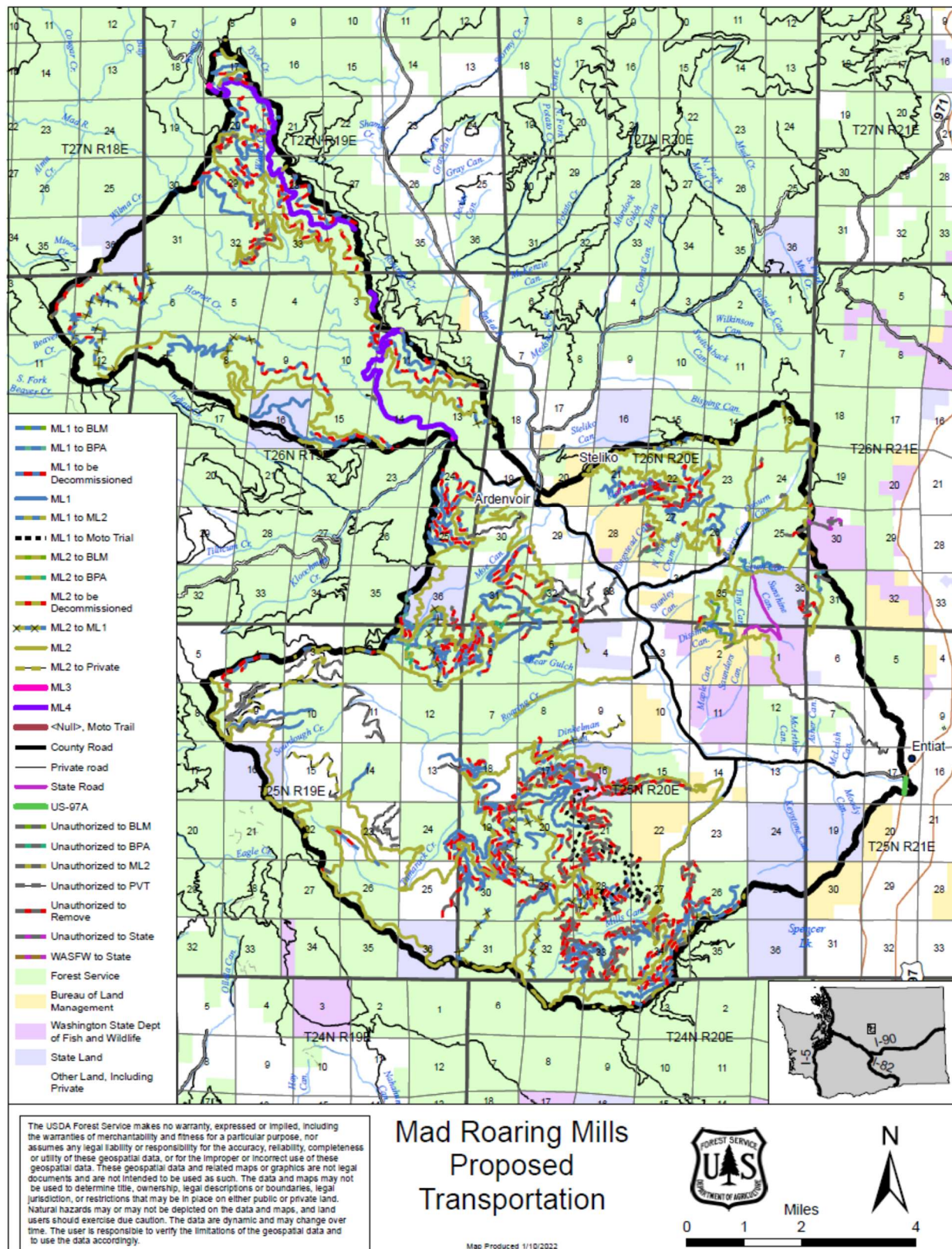


Figure 5: Existing Projects

